<center>**REMARKS/ARGUMENTS**</center>

Claims 1-33 are pending in the present application. Claims 1-22 and 24-33 and were amended to recite the invention in a clearer, more definite form. No claims were added or canceled. Applicants have carefully considered the cited art and the Examiner's comments, and believe claims 1-33 patentably distinguish over the cited art and are allowable in their present form. Reconsideration of the rejection is, accordingly, respectfully requested in view of the above amendments and the following comments.

I.   Specification

The Examiner has objected to the disclosure because particulars regarding the copending application referred to therein have not been provided. By the present Amendment, the missing information has been provided.

Therefore, the objection to the specification has been overcome.

II.   35 U.S.C. § 102, Anticipation

The Examiner has rejected claims 1-33 under 35 U.S.C. § 102(b) as being anticipated by Sun Qixiang (Reliable Multicast for Publish/Subscribe Systems), hereinafter "Sun". This rejection is respectfully traversed.

In rejecting the claims, the Examiner states:

> Regarding claims 1, 17, and 33, Sun anticipates a method/product for indicating status from a subscriber (section 5.3, p. 49, "member"; p. 52, "pending_join, pending_leave, join, or leave") to a broker (p. 49, "logger") in a multicast publish/subscribe messaging system (p. 49, "rpbcast") comprising the broker and a plurality of subscribers (p. 11, ¶2; p. 49), the subscriber comprising: means, responsive to seeing an indication of status (p. 30, ¶5; p. 49. ¶4). for setting a timer (p. 49, "time t"); means for canceling (p. 52, "t_join :=-1) the timer if the subscriber sees an indication of status prior to the expiry of the timer (p. 49, "before and after"); and means for sending, on expiry of the timer, an indication of status to the broker (p. 52, "cmembers"). It is inherent that a publish/subscriber messaging system has at least one subscriber.

Office Action dated May 23, 2007, pages 2-3.

Claim 1, as amended herein is as follows:

> 1.   A multicast publish/subscribe messaging system comprising a broker and a plurality of subscribers, the system comprising:
> a subscriber of the plurality of subscribers including a liveness indicator for indicating liveness to the broker, the liveness indicator comprising:
> setting means, responsive to the subscriber seeing a first indication of liveness, for setting a timer;

cancelling means, responsive to the subscriber seeing a second indication of liveness from another subscriber of the plurality of subscribers prior to expiry of the timer, for cancelling the timer; and

sending means, responsive to expiry of the timer, for the subscriber to send a third indication of liveness to the broker.

A prior art reference anticipates the claimed invention under 35 U.S.C. § 102 only if every element of a claimed invention is identically shown in that single reference, arranged as they are in the claims. *In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). All limitations of the claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 32 U.S.P.Q.2d 1031, 1034 (Fed. Cir. 1994). Anticipation focuses on whether a claim reads on the product or process a prior art reference discloses, not on what the reference broadly teaches. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983). In this case each and every feature of the presently claimed invention is not identically shown in Sun, arranged as they are in the claims; and, accordingly, Sun does not anticipate the claims. With respect to claim 1, in particular, Sun does not disclose or suggest "setting means, responsive to the subscriber seeing a first indication of liveness, for setting a timer", "cancelling means, responsive to the subscriber seeing a second indication of liveness from another subscriber of the plurality of subscribers prior to expiry of the timer, for cancelling the timer", or "sending means, responsive to expiry of the timer, for the subscriber to send a third indication of liveness to the broker".

Sun is directed to a publish/subscribe system, and is primarily directed to a mechanism for guaranteeing continued forward progress of messages for all connected member and for allowing disconnected members to recover messages. Sun accomplishes these objectives by providing a centralized server, referred to as a "logger", with stable storage that archives packets of data and handles retransmission requests (see page 14, first paragraph of Sun). Sun also discloses a gossip-based recovery for reducing logger workload, and as noted by the Examiner, Sun describes a "liveness property of the implementation disclosed therein. The liveliness property is described on pages 30-31 of Sun and basically means that "each receiver will eventually *detect* all the missing messages, either through heartbeats or a later message" (see page 31 of Sun).

The publish/subscribe system in Sun, however, does not include a subscriber that includes "setting means, responsive to the subscriber seeing a first indication of liveness, for setting a timer" as now recited in claim 1. In rejecting claim 1, the Examiner refers to page 49 of Sun as disclosing setting a timer. Pages 49-51 of Sun discuss defining a time t by a vector of sender sequence numbers in order to define the notion of "before" and "after". On page 50, it is stated that these vector times are sufficient for the purpose of determining when a new member

has joined, and then describes the join process. Sun does not disclose, however, or in anyway suggest setting a timer in response to a subscriber seeing a first indication of liveness as now recited in claim 1. Such a timer is not disclosed in the portion referred to by the Examiner or anywhere else in Sun. Therefore, Sun does not disclose a subscriber that includes "setting means, responsive to the subscriber seeing a first indication of liveness, for setting a timer" as recited in claim 1 and does not anticipate claim 1.

Sun additionally does not disclose or suggest "cancelling means, responsive to the subscriber seeing a second indication of liveness from another subscriber of the plurality of subscribers prior to expiry of the timer, for cancelling the timer" as now also recited in claim 1. The Examiner refers to page 49 of Sun as disclosing canceling a timer if the subscriber sees an indication of status prior to expiry of a timer. Applicants respectfully disagree. The term "*before and after*" referred to by the Examiner on page 49 of Sun is used to indicate that the vector time described therein enables defining "the notion of *before* and *after*". This is a very generalized statement, and in no way comprises a suggestion or teaching of canceling a timer "responsive to the subscriber seeing a second indication of liveness from another subscriber of the plurality of subscribers prior to expiry of the timer" as now recited in claim 1. Therefore, Sun does not disclose "cancelling means, responsive to the subscriber seeing a second indication of liveness from another subscriber of the plurality of subscribers prior to expiry of the timer, for cancelling the timer", and also does not anticipate claim 1 for this reason.

Yet further, Sun does not disclose or suggest "sending means, responsive to expiry of the timer, for the subscriber to send a third indication of liveness to the broker" as recited in claim 1. The Examiner refers to the term "cmembers" on page 52 of Sun as a disclosure of this feature. The term "cmember" refers to current group members and appears to relate to joining times but is not a disclosure of a subscriber sending an indication of liveness upon expiration of a timer. Therefore, Sun also does not disclose "sending means, responsive to expiry of the timer, for the subscriber to send a third indication of liveness to the broker" as now recited in claim 1.

For at least all the above reasons, claim 1 is not anticipated by Sun and patentably distinguishes over Sun in its present form.

Claims 2-16 depend from and further restrict claim 1, and are also not anticipated by Sun, at least by virtue of their dependency. Furthermore, many of these claims recite additional features that are not disclosed or suggested by Sun. For example, Claim 4 depends from claim 1 and further recites;

4.   The system of claim 1, wherein the cancelling means comprises:
means for determining at least one of:
                    i) if a desired number of subscribers of the plurality of subscribers have
            indicated liveness, and
                    ii) that the broker is aware of the presence of at least one subscriber; and
        means, responsive to determining that at least one of a desired number of subscribers of
the plurality of subscribers have indicated liveness and that the broker is aware of the presence of
at least one subscriber, for cancelling the timer.

In rejecting claim 4, the Examiner states:

            Regarding claims 4 and 20, Sun anticipates the subscriber of claims 1
        and 17, wherein the means for canceling (p. 52, "t_join :=-1) the timer comprises:
        means for determining at least one of i) if a desired number of subscribers have
        indicated status (p. 52, last ¶) and ii) that the broker is aware of the presence of at
        least one subscriber (p. 53, "cmember"); and means, responsive to determining
        that a desired number of subscribers have indicated status and/or that the broker
        is aware of the presence of at least one subscriber, for canceling the timer (p. 52,
        "t_join :=-I).

Office Action dated May 23, 2007, page 3.

        Pages 52 and 53 of Sun describe counters for monitoring when members enter or leave

pending join or pending leave states, respectively. The pages also describe merging the current

group membership (cmembers) with newly arrived ones. Nowhere, however, is there a disclosure

of canceling a timer in response to one of the events recited in claim 4. Claim 4, accordingly,

patentably distinguishes over Sun in its own right as well as by virtue of its dependency.

        Sun also does not disclose or suggest features of other dependent claims including, for example,

claim 5 which recites "means for receiving and storing a max value, wherein the max value is

representative of the desired number of subscribers"; claim 13 which recites "means for designating as a

primary subscriber a first subscriber of the plurality of subscribers to register interest in a topic" and

"means for maintaining an active connection to the primary subscriber"; or claim 14 which recites

"means, responsive to a failure of the primary subscriber, for designating subscriber of the plurality of

subscribers whose indication of liveness is next received as a new primary subscriber". These claims are

also allowable over Sun in their own right as well as by virtue of their dependency.

        Independent claims 17 and 33 have been amended in a similar manner as claim 1, and also

patentably distinguish over Sun for similar reasons as discussed above with respect to claim 1. In

addition, claim 33 has been amended to be in better form. Support for the amendments to claim 33, in

particular, can be found, for example, on page 21, lines 23-29. Claims 18-32 depend from and further restrict claim 17 and are also not anticipated by Sun.

. Therefore, the rejection of claims 1-33 under 35 U.S.C. § 102(b) has been overcome.

III. **Conclusion**

For at least all the above reasons, claims 1-33 patentably distinguish over Sun and are believed to be allowable in their present form. It is, accordingly, respectfully requested that the Examiner so find and issue a Notice of Allowance in due course.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: <u>August 21, 2007</u>

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Respectfully submitted,

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